

REMARKS

This timely responds the Office Action mailed January 16, 2004. Claims 1-17 are active in this application, of which claims 1 and 7 are independent.

Based on the above Amendments and the following Remarks, Applicants respectfully request that the Examiner reconsider the outstanding objections and rejections and they be withdrawn.

***Rejections Under 35 U.S.C. §103***

Claims 1-12 stand rejected under 35 U.S.C. §103(a) for being unpatentable over Applicants' Admitted Prior Art ("AAPA") in view of U. S. Patent No. 6,466,282 issued to Sasuga, *et al.* ("Sasuga"). This rejection is respectfully traversed.

In the Office Action, the Examiner stated that Sasuga qualifies as prior art because "Sasuga has a continuation date back to March 11, 1993" (Office Action, Page 4). Applicants respectfully submit that, although its parent applications (e.g., U. S. Patent No. 5,987,188) may qualify prior art, Sasuga does not qualify as prior art technically because its filing date is anticipated by the priority date of the present application. Nevertheless, this reply has been prepared with an assumption that the Examiner has provided its parent applications (e.g., U. S. Patent No. 5,987,188) instead of Sasuga.

In the Office Action, the Examiner admitted that "AAPA does not disclose the main PCB being a single PCB" (Office Action, page 2). Regarding this missing feature, the Examiner asserted "Sasuga ... teaches the use of a three pieces staple shaped (U shaped) PCB ... and an integral staple shaped PCB ..." (Office Action, page 2). Based on these two pieces of prior art, the Examiner asserted "It would have been obvious ... to substitute an integral staple shaped

main PCB for AAPA's three pieces staple shaped main PCB ... because the control of the fabrication process of the device can be simplified due to the reduction of part number, taught by Sasuga ... (Office Action, page 3). This assertion is respectfully disagreed with.

Claim 1 recites:

“1. A liquid crystal display device, comprising:  
*dual bank type source driver PCBs* installed at top and bottom of a liquid crystal panel;  
*a gate driver PCB*;  
*a staple-shaped main PCB* formed at the back of the liquid crystal panel; and  
*a timing controller mounted at the main PCB* to process signals input from outside and generate driving signals, the main PCB transmitting the relevant driving signals to the respective source driver PCBs and the gate driver PCB.”

In this regard, the “three pieces staple shaped (U shaped) PCB” shown as PCB1 in Fig. 26 of Sasuga is driver circuit substrates. The two PCB on the left and right sides of the panel PNL are source driver PCBs and the PCB between the source driver PCBs at the bottom is a gate driver PCB. Thus, the driver circuit substrates PCB1 correspond to the claimed dual bank type source driver PCBs and the claimed gate driver PCB.

As clearly shown in Fig. 26, Sasuga does not disclose or suggest the claimed main PCB which is (a) different from the driver circuit substrates PCB1 (i.e., source PCBs and gate PCB) and (b) *formed at the back of the panel PNL*.

Sasuga discloses “an undivided integral “U-shaped” PCB could be used” (Column 19, Line 12). However, even if the sources PCBs and the gate PCB are undivided and integral, the resulting product would be a source/gate driver circuit substrate PCB, which is not the claimed main PCB that should be provided independently.

Even if the structure of AAPA is substituted with the undivided integral U shaped PCB1 of Sasuag, the resulting product would be, in Fig. 3 of the present application, the source driver PCBs 210, 220 and the gate driver PCB 230 that are undivided and integral. The modified structure of AAPA would still comprises three pieces of the main PCBs 240, 241 and 242 that are connected via flexible printed cables (FPCs) 260 and 270.

It is submitted that the asserted combination does not disclose or suggest the claimed feature of “a staple-shaped main PCB formed at the back of the liquid crystal panel; and a timing controller mounted at the main PCB”. This claimed feature would not have been obviously derivable from the asserted combination. Thus, it is submitted that claim 1 is patentable over AAPA and Sasuga. Claims 2-6 that are dependent from claim 1 would be also patentable at least for the same reason.

Similarly, claim 7 recites:

“a main printed circuit board (PCB) *attached on the back surface of the liquid crystal panel*, the main PCB comprising:  
a timing controller generating a first source driving signal,  
a second source driving signal and a gate driving signal;  
*a first portion extending along the first source driver PCB*  
and outputting the first source driving signal to the first source driver PCB; and  
*a second portion extending along the second source driver PCB* and outputting the second source driving signal to the second source driver PCB”.

As previously mentioned, these claimed feature are not disclosed in the cited references. Thus, it is submitted that claim 7 is patentable over them. Claims 8-12 that are dependent from claim 7 would be also patentable at least for the same reason.

Accordingly, Applicants respectfully request that the rejection over claims 1-12 be withdrawn.

Claims 13-17 stand rejected under 35 U.S.C. §103(a) over AAPA in view of Sasuga, and further in view of U. S. Patent No. 6,590,553 issued to Kimura, et al. This rejection is respectfully traversed.

Claims 13-17 are dependent from claim 7. As previously mentioned, claim 7 is believed to be patentable over AAPA and Sasuga. For example, the combination of AAPA and Sasuga does not disclose or suggest:

“a main printed circuit board (PCB) *attached on the back surface of the liquid crystal panel*, the main PCB comprising:  
a timing controller generating a first source driving signal, a second source driving signal and a gate driving signal;  
*a first portion extending along the first source driver PCB* and outputting the first source driving signal to the first source driver PCB; and  
*a second portion extending along the second source driver PCB* and outputting the second source driving signal to the second source driver PCB”.

Kimura is directed to data driver PCBs formed along both of two opposite sides of a display region and gate driver PCBs formed along both of another two opposite sides of the display region. However, Kimura does not cure the deficiency from AAPA and Sasuga. Particularly, Kimura does not disclose or suggest the above-mentioned claimed feature. Thus, it is submitted that claim 7 is patentable over AAPA, Sasuga and Kimura. Claims 13-17 that are dependent from claim 7 would be also patentable at least for the same reason.

Accordingly, Applicants respectfully request that the rejection over claims 13-17 be withdrawn.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete response has been made to the outstanding Office Action and, as such, claims 1-17 are in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,



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